

WHAT IS CLAIMED IS:

1. An image reading device for an optical disc comprising:
a detecting section for detecting the setting of an
optical disc to a related location,

5 a reading section for reading information out of said
optical disc of which the setting is detected,

slice level setting means for binarizing an RF signal
output from said reading section at a predetermined slice level
set by said level setting means, and

10 an adjusting section for adjusting a slice level set by
said slice level setting means to an optimum slice level which
is best fit for the optical disc, when the setting of the optical
disc is detected by said detecting section.

15 2. The image reading device according to claim 1, wherein
in a case said optical disc is a multi-layer optical disc,
said adjusting section adjusts, for each layer, the slice level
set by said slice level setting means to the optimum slice level,
when the optical disc is set.

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3. The image reading device according to claim 1, further comprising:

a jitter detecting section for detecting a jitter of the RF signal, and

5 when said adjusting section changes a slice level set by said slice level setting means, a slice level detected when said jitter detected by said jitter detecting section is at a minimum level is judged to be an optimum slice level.

10 4. The image reading device according to claim 1, further comprising:

a jitter detecting section for detecting a jitter of the RF signal, wherein

an equalizer characteristics thereof is fixed, and

15 when said adjusting section changes a slice level set by said slice level setting means and said jitter detecting section detects at least two slice levels, a slice level detected when said jitter detected by said jitter detecting section is at a minimum level is judged to be an optimum slice
20 level.

5. The image reading device according to claim 3, wherein
said adjusting section increments a slice level set by
said slice level setting means from a reference slice level
in steps of a fixed quantity, and

5 when the jitter detected at the incremented slice level
has a decreasing direction in quantity, said adjusting section
repeatedly continues the incrementing of the slice level till
the jitter changes quantity varying direction to an increasing
direction,

10 when the jitter detected at the incremented slice level
has an increasing direction in quantity, said adjusting
section decrements the slice level from the reference slice
level in steps of a predetermined fixed quantity,

when the jitter detected at the decremented slice level
15 has a decreasing direction in quantity, the decrementing of
the slice level is repeatedly continued till a quantity varying
direction of the jitter is changed to an increasing direction,

said adjusting section judges that the slice level
detected when the jitter changes varying direction from the
20 decreasing direction to the increasing direction or the
increasing direction to the decreasing direction, takes a
minimum value, and judges the slice level detected at that time
to be an optimum slice level.

6. The image reading method in said image reading device according to claim 3, comprising the steps of:

(a) incrementing a slice level set from a reference slice level in steps of a fixed quantity,

5 (b) when the jitter detected at the incremented slice level has a decreasing direction in quantity, repeatedly continuing the incrementing of the slice level till the jitter changes quantity varying direction to an increasing direction,

10 (c) when the jitter detected at the incremented slice level has an increasing direction in quantity, decrementing the slice level from the reference slice level in steps of a predetermined fixed quantity,

15 (d) when the jitter detected at the decremented slice level has a decreasing direction in quantity, repeatedly continuing the decrementing of the slice level till a quantity varying direction of the jitter is changed to an increasing direction,

20 (e) judging that the slice level detected when the jitter changes varying direction from the decreasing direction to the increasing direction or the increasing direction to the decreasing direction, takes a minimum value, and

(f) judging the slice level detected at that time to be an optimum slice level.

7. An image reading method for an optical disc comprising the steps of:

(a) storing a jitter detected at a first slice level in a first memory,

5 (b) storing a jitter detected at a second slice level larger than the first slice level in a second memory,

(c) reading out the jitters stored in said first and second memories to compare,

(d) after the comparison in the step (c), leaving the memory
10 in said memory storing a smaller jitter and deleting the memory in said memory storing a larger jitter,

(e) as a result of the comparison in the step (c),

when a jitter of the first slice level is larger than a jitter of the second slice level, a third slice level larger
15 than the second slice level is selected to detect a jitter so as to store in said memory in which the memory is deleted, and

when a jitter of the first slice level is smaller than a jitter of the second slice level, a third slice level smaller
20 than the first slice level is selected to detect a jitter so as to store in said memory in which the memory is deleted,

(f) reading out to compare the jitter newly stored in the step (e) and the jitter left in the step (d),

(g) according to the same processes as in the steps (d) and (e), deleting the memory in any one of said first and second

25 memories to set a new slice level, and

(h) repeating the processes as in the steps (c) to (g), at a time when a jitter by the new slice level becomes larger, the slice level at which a small jitter is detected is set to be the best slice level.

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Figure 1. A diagram showing the process of detecting jitter and setting the best slice level. The diagram consists of a vertical sequence of steps, each represented by a box containing a number and a description of the step. The steps are: 1. Initial slice level is set. 2. Jitter is detected. 3. Jitter is compared with a threshold. 4. If jitter is larger than threshold, the slice level is increased. 5. If jitter is smaller than threshold, the slice level is decreased. 6. The process is repeated until the jitter is within the threshold. 7. The final slice level is set as the best slice level.